

The Earth Science

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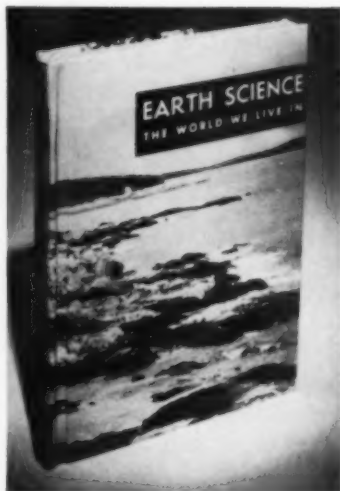
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(See Page 17)

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September - October, 1954



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Earth Science

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Vol. 7, No. 8

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EDITOR'S MEMO PAD

Letters

From our good friend Ralph E. Merrill, of Minerals Unlimited, Berkeley, California:

"It has been brought to our shocked attention that our ad in the May-June issue of the DIGEST contained an insignia bearing the legend, 'Radiation Counter Laboratories,' instead of the emblem of the American Association of Gem and Mineral Suppliers which properly belonged there. We would appreciate a printed apology, as we have been accused of all sorts of heresy as a result of the ad!"

Our sincere apology, indeed, for the misdeed of our printer!

*

From Elsworth Brown, Chattanooga, Tennessee:

"Regret to see a fine publication watered down to becoming more and more like the dry, tiresome old-time scientific journals, most of which are subscribed to merely to maintain reference files. Yours has been interesting, without the stuffiness and issue-after-issue sameness of the typical scientific journal. I hope you don't go too far in 'reformation' of EARTH SCIENCE DIGEST."

We won't!

*

From Arthur W. Brown, Mountain View, Calif.:

"As a printer, I am pleased with the improvements in the July-August issue. Never before had I seen a contents page as useful as that one. I could wish that the 'Recommended Readings From Society Bulletins' gave the addresses of the secretaries. I should like to get that April issue of *Rear Trunk* that gave tips on taking kodachromes."

Thank you, and will do!

*

From Frederick Hazen, 25 Mount Vernon Street, Arlington 74, Massachusetts.

"On reading an article in EARTH SCIENCE DIGEST on mineral research, I thought I would write you of my proven ability to locate minerals of any kind and give the depth accurately.

"I am a well-driller and a dowser as well. It is the mineral in the water that leads me to the underground vein of spring water.

"I can also find oil, coal or anything that has mineral in it. . . .

"I have located oil though not to any commercial value, but at a given depth, and can go into any gasoline station and give them exact depth of gas.

"I thought you might help me get in touch with some worthy party who would like to try me out. All I would ask is my expense. I have my own car."

*

Authors

LOU DENSTEDT is secretary of the Chamber of Commerce of Alexandria, Minnesota, where we recently enjoyed a visit and secured from him this article, which includes excerpts from Constant Larson's "The Kensington Runestone." DR. J. DANIEL WILLEMS is an eminent Chicago medical man who shows in his avocation of lapidary the same qualities of mind and hand that distinguish him professionally. J. EMIL SMITH of Springfield, Illinois, is Editor of the *Illinois State Journal*. PERNELL BARNETT writes here of times before he "reformed" and became the rockhound and lapidary whose tumble polisher at his home in Orange, California was described and illustrated in our last issue. VIOLET ALLEN is the "Vi" of the firm of "Gene & Vi" at Los Angeles, California. ROBERT E. RIECKER, of Chicago, should write detective stories, judging from his success here in keeping you guessing as to "who done it." RUSSELL MACFALL, Chicago newspaper man, has revised for us his priceless short compendium of gem materials from the *Temple*.

*

Cover

Here is a gem of a picture of the author of a gem of an article!

—BEN HUR WILSON, *Editor*

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WARD'S NATURAL SCIENCE ESTABLISHMENT, INC.
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Earth Science

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Vol. 7, No. 8

The Story of the Kensington Runestone

by LOU DENSTEDT

IN THE FALL OF 1898, a Swedish farmer, Olof Ohman by name, living near Kensington, Minnesota, found in grubbing an aspen tree, a large flat stone imbedded in the roots. His little sons, it is said, stooping to dust it off so that he might sit on it, saw some queer carvings on it. The stone was taken to the nearby farm home of Ohman where the marks on the stone were cleaned out. To everyone's amazement there was found a strange inscription on the face of the stone and on one edge. The stone, a native rock called graywacke, not uncommon in the region, measures 31 inches long, 16 inches wide, and 6 inches thick. It weighs 202 pounds, so therefore must have been chiseled out on or nearby the spot where it was discovered.

Soon thereafter the stone was brought to the small village of Kensington where Mr. Ohman was in the habit of doing his trading, and was there exhibited in the window of the local bank. Thus it became known as the "Kensington Runestone" from the name of the village and because of the fact that the inscription was in "runes", as the characters used by the Norseman were called. It at once aroused a great deal of controversy as to its authenticity. The inscription was not completely translated, however, until H. R. Holand of Ephraim, Wisconsin, a well-known Norwegian scholar and historian, became interested in it. He secured possession of the stone from the finder, and devoted many years of his time to research as to its genuineness. His translation which is now accepted both here and abroad, reads as follows:

"8 Goths and 22 Norwegians on exploration, journey from

Vinland over the west We
had camp by 2 skerries one
days-journey north from this stone
We were and fished one day After
We came home found 10 men red
with blood and dead Ave Maria
Save from Evil"

The following three lines appear on the edge of the stone:

"have 10 of our party by the sea to look
after our ships 14 days-journey
from this island Year 1362"

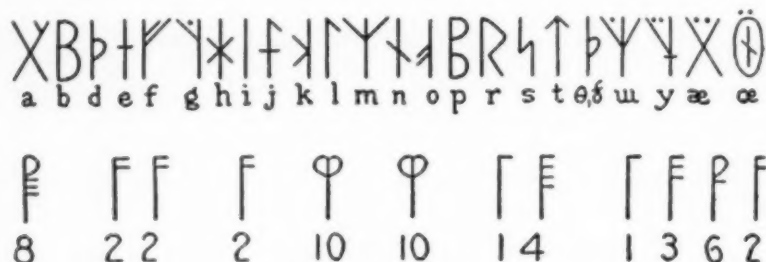
A skerry is a rock island. After considerable exploration, the lake with the skerries referred to on the stone was identified as Cormorant Lake in Becker County, Minnesota. At the place on Cormorant Lake where the camp must have been made and where the fishermen found their scalped companions "red with blood and dead", are large boulders with triangular holes drilled in three of them. It is claimed that this was done for the purpose of mooring their boat in the same way as it was done along the coast of Norway in the 14th century. These rocks on Cormorant Lake have become known as the "Anchor Rocks" or "Mooring Rocks" and have attracted a great deal of interest.

Several other mooring rocks have been found along the route that was taken by the Norsemen. One was found near where the stone was found, one on Lake Jessie near Alexandria, one 20 miles southeast of Alexandria, and one north of Sauk Centre, indicating that the explorers continued their journey on eastward for at least several miles, possibly attempting to cross the country back to Vinland from whence they had come on their journey westward.

Vinland was in what is now Massachu-

setts in the Cape Cod area. Several mooring rocks have been found, north towards Lake Winnipeg. These rocks, all being large boulders, are still there and can be seen at any time. The holes are all of triangular-shape about one inch across and from five to seven inches deep. Proof of the fact that

pedition to Greenland found no people in the Western settlement it went on to Vinland, and not finding the Greenlanders there, the expedition made search for them on the shores of Hudson's Bay, and from there came down to where the stone was found. It is known that some members of



THE RUNIC ALPHABET

these holes were drilled hundreds of years ago is indicated by the weatherbeaten smoothness of the inside of the holes.

The "sea" referred to on the stone as the place where the ships were left has been identified as Hudson's Bay, and to reach Cormorant Lake the party must have come down the Nelson River to Lake Winnipeg, then down the Red River of the North, thence to Cormorant Lake, thence down through a chain of lakes to the Chippewa River, to within a few miles west of Kensington, then through a ravine, to where the stone was found.

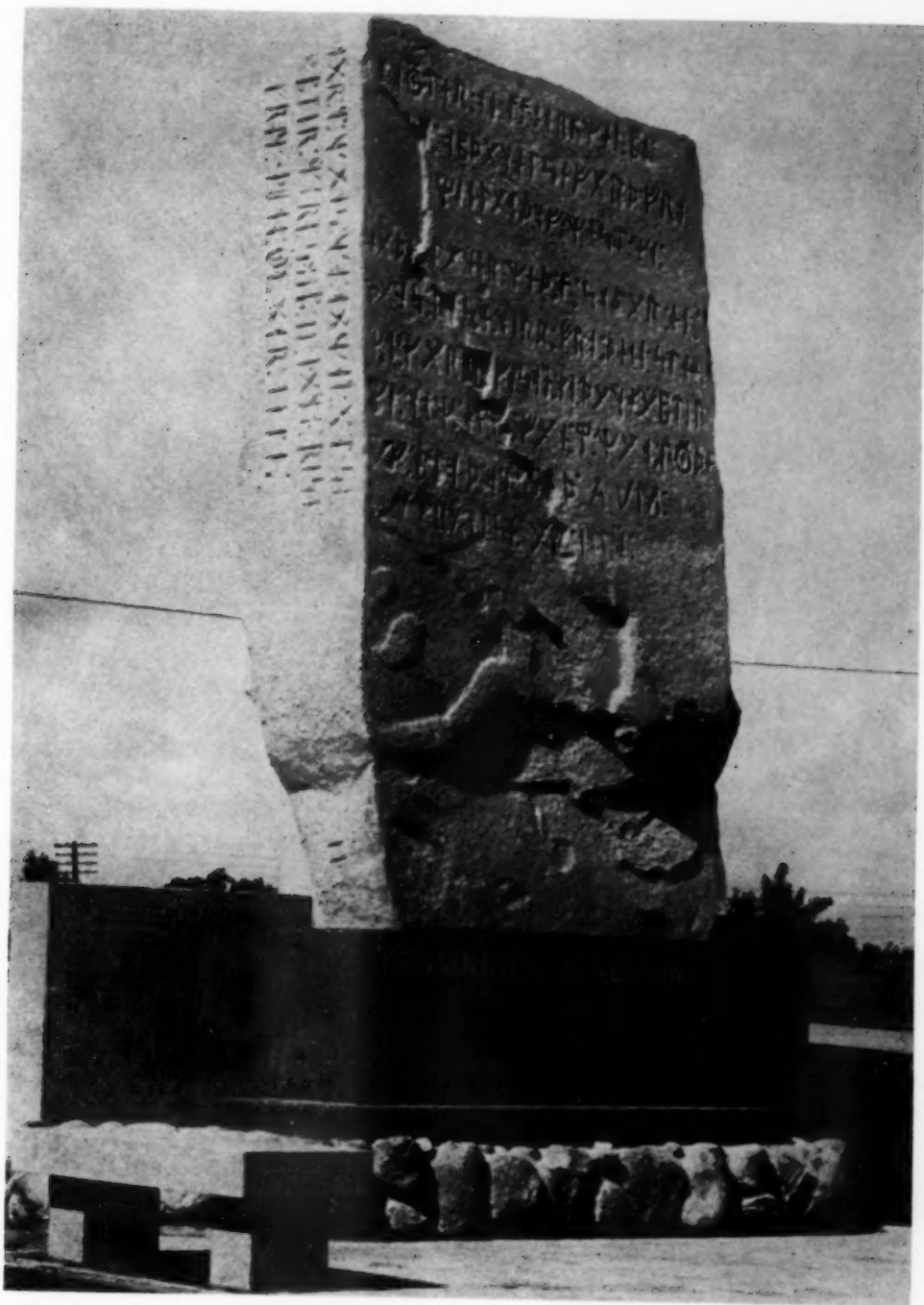
We now know that about the year 1355 Magnus Erickson, the King of Sweden and Norway, sent out an expedition under the command of Paul Knutson to go to Greenland to see to it that the Christian religion would not perish there. It is believed that the King had received word that the people of the Western Settlement of Greenland had emigrated to the mainland and lost their religion. It is probable that the King received this information from John Guthormson, a prominent politician of the time, who had come from Iceland on board a ship that had come from Markaland. This ship arrived in Norway about 1348.

It is supposed that when Knutson's ex-

pedition returned to Norway in 1363 or 1364. The ten of the party were left with ships, waited over a year for the explorers to come back down the Nelson River to Hudson's Bay, but as they did not return, the men, thinking that they may have crossed overland to Vinland, sailed back around the coast of Vinland, and not finding them there, returned to Norway. The only evidence as to what became of the rest of Paul Knutson's party is the story told by the translation of the runes on the stone itself.

In recent years, continuing research on early Norse explorations has established that these early visitors to America left a letter to posterity in the form of the Kensington Runestone. The Smithsonian Institution in Washington, D. C., our national museum, has termed the Kensington Runestone "the most important object ever found in the new world."

The illustration of the Runic alphabet will enable our readers to appreciate the inscription on the Runestone. This was taken from the July, 1950, issue of *Speculum*, a journal of mediaeval studies, published quarterly by the Mediaeval Academy of America, Cambridge, Massachusetts. Actually there are records showing that



APPROACHING ALEXANDRIA, MINNESOTA, from the East on picturesque Highway No. 52 a gigantic reproduction of the Runestone may be seen at Runestone Memorial Park. The granite selected for the replica represents the Graywacke Rock on which the Runes of 1362 were cut. The Replica, which weighs 22 tons, is 5 times proportionately the size of the original stone, which measures 31 inches long, 10 inches wide and 6 inches thick. Erection of the monument was sponsored by the Alexandria Kiwanis Club.

there have been three Runic alphabets. There was one in use many years prior to that illustrated. The illustration, however, is that of the alphabet used down through the years after this period. This is one of the chief factors involved in the establishment of the authenticity of the Kensington Runestone. Runologists are also able to establish other factors involved in determining the actual period when the stone was inscribed.

In corroboration of the story told by the stone, various Scandinavian implements of the 14th century have been found in the vicinity of the route the party must have taken to reach the place where the stone was found. These implements are three battle-axes, one of which is a "beard" axe, a firesteel, and a spearhead. These articles are pictured and the stories of their finding and verification are given in Holand's books, "The Kensington Stone," "Westward from Vinland," and "America 1352-1365."

An exact replica of the Kensington Runestone, copied by Smithsonian Institution craftsmen, is on exhibit permanently in the Chamber of Commerce building in Alexandria, Minnesota. Other replicas are on display in the Smithsonian Institution in Washington, D. C., and in the State Historical Museum in St. Paul. The original stone is being held in a vault in Alexandria for safekeeping.

In 1932, after two trips to Europe, where he did intensive research work in twenty-six museums in six countries, Mr. Holand published his book, "The Kensington Stone," which tells the story of his research. Since the publication of this volume of re-

search, the stone has been almost universally accepted as genuine and much has been written concerning it in this country as well as in Canada, Europe, and South America.

As to the meaning of "A day's journey," Holand in his book, "The Kensington Stone," goes into this discussion very fully and quotes such experts as Gathorne, Hardy, Hovgaard, Nansen, and Fossum as concurring in the opinion stated by Holand "that an ordinary 'daghrise' represented a unit of distance of approximately 75 miles." The word "daghrise" means day's journey and was an expression used by sailors to determine progress by dead reckoning. This expression would naturally be used by those in the expedition—not referring to the distance they traveled each day in going from Hudson's Bay to the location of the stone—but as a measure of distance, just as we would speak of a league or a mile. With this in mind, 14 day's journey would be approximately the distance from Hudson's Bay to where the stone was found; and one day's journey the distance to Cormorant Lake, where the ten men were scalped. It is not to be supposed that the men actually measured these distances but that they made the statements only as estimates.

As to the runic inscription, we shall close by saying that Mr. Holand has undoubtedly devoted more time and study to the runic characters, words and language used in the inscription than any other living person. He has verified each and every word and character, and to him historians everywhere will ever owe a great debt of gratitude.

Ancient Water-wheels Turn Once More

by DR. J. DANIEL WILLEMS

IDAR-OBERSTEIN, Germany, a gem center for two thousand years, is being restored to some of its old time attractions. The gem cutting industry of Idar-Oberstein, which was a going concern when the Roman legions overran Central Europe, is

experiencing somewhat of a revival. The valley of the Nahe River and other valleys in that region were for many years the world's greatest source of agates and similar gemstones. The agate beds were worked by the local population, and their products,

in the form of beautifully cut gemstones, carved stones, marbles, ornamental objects such as knife handles, umbrella handles, vases, dishes, etc. were cut and beautifully polished and then spread over the entire world. They were considered the world's finest, and were sought by those who ap-

preciated the best. Gradually the agate beds became exhausted, and the raw agate material had to be imported, largely from South America.

pressure against the grinding wheel, and the grinding thereby speeded up. Many of these methods had fallen into disuse, because of the deterioration and gradual breakdown of the various mills.

At one time at least 56 of these mills were in regular use in this region, and



ALTE ACHATSCHLEIFE IN IDAR

Idar-Oberstein fell upon bad times in the first World War, and many of the old mills became dilapidated and were abandoned. Electric power began to take the place of the water power formerly used.

Familiar to those interested in gem cutting are the old pictures in the gem literature of the tremendously large sandstone grinding wheels which were set up alongside the various rivers, where these wheels could be turned by water power. In the pictures of these wheels could be seen the so-called "tipping stools," which were a type of bench upon which the cutters stretched themselves out at full length, with the chest on the "tipping stool," and the feet against a firmly resistant backboard. In this way the cutter could bring to bear tremendous

whole families of gem cutters would make use of them in their profession. The mills were usually owned by one or more owners, or a family of owners, and those cutters who did not have their own mills would then come to the available mills, and, bringing their own raw material, would cut their gems on a rental basis.

When adequate quantities of acceptable grade of agates became more or less difficult to obtain, much of the industry turned to making other objects, such as desk sets, agate guides for fishing rods, etc.

Recently one of the mills which was still in partly usable condition has been restored, and an artificial lake has been dredged out and rebuilt to supply the water power for the operation of the old mill. This is apparently the last mill which is still in use, and the operation of it is at this time being revived.

An effort was originated by the local

Germans in Idar-Oberstein to get this project into a going concern again. When the planners were all through with their work, it was found that 60,000 marks would be required for the dredging out of the former lake into a usable mill pond, so that enough water could be captured to be used for the power necessary to run the mill. At this point the U. S. Army entered the picture, and one of the engineering training groups of the region took on the job as an engineering training project. They moved in with bulldozers, cranes, pumps and air compressors, and in a short time the lake was excavated, the water impounded, and proper sluice gates installed.

Recently the water was turned on, and the mill began to turn, and an old timer who still remembered how to stretch himself out on the "tipping stool" and bring the stone against the wheel, was there to show the youngsters how it used to be done.

Our illustration shows the mill as it appeared a generation ago. This mill is now the only one in operation, and will be conserved and more or less continually operated for the purpose of attracting tourists and demonstrating to the present gem cutting fraternity the old time methods of this world renowned gem center.

Lincoln May Have Been A Rockhound

"Abraham Lincoln probably was a rockhound," writes J. Emil Smith, editor of the *Illinois State Journal* in a recent issue. Whether or not this may actually be true, we may only conjecture, but as a young "rail-splitter," spending much time out of doors in close contact with nature, it would not be unreasonable to believe that his keen intellect and powers of observation may have directed his attention in this direction.

Editor Smith quotes Dr. Ben Hur Wilson, an alumnus of Iowa Wesleyan College of Mount Pleasant, Iowa, as follows:

"That Abraham Lincoln was probably a 'rockhound' is one of the interesting and little known Lincoln sidelights.

"D. A. Hayes, president of the local Rock Club, discovered Lincoln's possible interest in geology while chatting with Dr. Wilson, editor of *EARTH SCIENCE*.

"Wilson, an acquaintance of Hayes, through the Midwest Federation once mentioned that he had seen in the museum of the Iowa Wesleyan College, a small rock collection made by Abraham Lincoln. On Lincoln's birthday, last February 12, Hayes received a letter from Dr. Wilson, in part:

"In regard to the A. Lincoln relic—my recollection is as follows: Mineralogy

and geology were taught in the old college before Civil War days and afterwards discontinued. Back in one corner of the museum was an old case of dusty miscellaneous minerals of interest to me.

"The collection first introduced Senator Clark, the "Copper King," of Montana, to minerals when he was a student at Wesleyan, and in this collection there was a small cigar box partitioned off with card board marked "collection of rocks made by A. Lincoln," and as I remember, his signature was written on one corner of the lid.

"Now, as to how it got there, Senator James Harlan, who was the college president, was also a member of Lincoln's cabinet, and Lincoln's son, Robert, married Harlan's daughter, Mary. She spent much time, especially during summers, in Mount Pleasant at her parents' home, with her children. And later when the Harlan home was broken up, this box was found and placed by someone in the mineral case at the college, just across the campus.

"I have never doubted the authenticity of the box, and although it has been a good many years since I have seen it, I have been told recently that it is still there. I believe it to be genuine."

Death Valley Sagenite

by PERNELL BARNETT

SOME 25 YEARS AGO when 9:00 x 13 tires first came on the market my friend and I fixed up a model T with a pair of such tires, a Ruxtel axle and a special cooling system and set out on a prospecting trip to the desert.

Many years before when the Death Valley country was booming my friend had prospected this country and had gambled with Death Valley Scotty, Dad Fairbanks, Shorty Harris, and other well known characters. In those days a man wasn't properly dressed unless he had at least one six shooter strapped on, and when they gambled the sky was the limit.

By the year 1927 many metals and ores that were formerly only mineral curiosities were now valuable. The old timers did not know anything about them and would only throw them away if perchance they found any. Consequently we decided to go over the ground again looking for minerals other than gold, silver, copper and lead. Slim chance they had missed any of these.

Near the south end of Death Valley we stopped at Owl Hole, so called by all the old timers; it is now Owl's Head Spring. As it would be days before we could get supplies, we had stocked up on such essentials as water, food, gas, tire patches, etc. Here we left the road (if you could call it such; just two tracks visible part of the time). It went northwest over the hills to the next canyon, then into Owl Lake Valley (dry of course). This was desolate desert country with not a tire track anywhere but our own. In fact there was no evidence of any kind that any man had preceded us.

About half way down the canyon on the left side were nodules and geodes. In places they were quite thick with a little seam agate. We were looking for metal ores and refractories. We neither knew nor cared about sagenite, plume or turtle back, little dreaming that in a few years this rock would be worth up to several dollars a

pound. Here was sagenite of the finest quality, literally tons of it on top of the ground, some of which could have been tossed into the pickup without carrying it a step.

When we dived into that steep unknown canyon (Sagenite Canyon) we did not know of an outlet or if the old Ford could climb out or not. Today, the modern car with five times the horsepower, and following a beaten path, must go up that hill in low gear.

In a few days we made our way over the rocks and sand to Wingate Wash, then up a side wash to a low range of rhyolite hills, about a half mile wide by two miles long. Here we found calcite nodules, some as round as a baseball, and a pretty rock or two which we promptly threw down after admiring it awhile, for it held no metal.

Lying on the ground and sticking out of the matrix were chunks of sagenite seam agate; some were too large to carry more than a few feet at a time. There were black, white, yellow, red, brown and blue colors. A little plume was mixed in for good measure, not to mention dendrites or clear pink agate of uniform color and texture. "Them thar hills" had sagenite from one end to the other. Many years later on top of the highest hill, I dug out a piece so large I gave it a shove and let it go bouncing and leaping down hill, rather than carry it. It was solid, for it didn't break and had sagenite showing in several places. Sometimes common agate, some in nodules, covers the ground, so that one walks on agate.

Now that I have turned rockhound I can see what we missed. At one of the recent shows a dealer was selling some of the poorer quality rock at \$1.50 per pound. Good slices were \$20.00 each. Just think, this was all ours for the picking up. Well, such is life. Anyway, I reformed in time



1. Owl Hole. 2, 3, 4. Wingate Wash

to get some very fine specimens, probably as large and colorful a collection as anyone now has from this particular locality.

Usually the sagenite is distributed throughout the agate. It is all seam sagenite. One never sees a sagenite nodule or geode as at Owl Hole. The sagenite needles must be a replacement of one of the zeolites. The whole rock is hard and does not undercut. There are a few soft spots in the rhyolite but largely the agate is in hard rock.

In summer it is as hot as H— itself; the instant the sun comes up in the morning everything seems to be on fire. In the winter it can be freezing cold with the wind howling a gale from the snow clad peaks. Not to mention rattlesnakes, etc.

However, once or twice in a lifetime a spring rolls around in which sufficient rain falls to bring out the poppies and other flowers. It was my good fortune in a recent year to hunt sagenite when the earth was carpeted with flowers. Dozens of varieties were in bloom, in places so thick one could not walk without treading on blossoms. The weather was mild and balmy with an occasional fleecy cloud in the sky, against a background of snow on the mountains. It was a beautiful sight to behold—and plenty of sagenite to fill the sack.

It must have been 15 or 20 years after my first trip to Owl Hole before the first rock from this canyon was cut. When I returned only a few nodules were lying around on top of the ground and only two or three holes had been dug. I suspicion some of this rock had been sold as Nipomo sagenite, (which it greatly resembles). In the last year this locality has become a popular hunting ground and the hills are full of holes. Some very fine red plume is also being taken from these diggings and a little black agate.

There is a band of rhyolite from five hundred to a thousand yards wide that crosses the canyon (Sagenite Canyon) almost at a right angle and runs either way for at least four or five miles. A few small pieces of sagenite agate have been picked

up along the entire length, but in quantity only near the original discovery.

The nodules are from the size of a bean to as large as a man's head, and shaped somewhat like a thin rain drop. One I saw was a geode about 24" long, 18" wide and weighing something like 75 pounds. It was fractured and came out in pieces. Occasionally one of the geodes has a slight amethystine color. They are found in hard rock which sometimes sticks out of the surrounding rhyolite six or eight feet. Although the rock is very hard it is fractured, so by dint of much hard work with a heavy crowbar and sledge hammer, the precious

nodules can be secured. Sometimes they occur in the soft yellow material nearby which has weathered until a shovel is all that is needed, (except hard work).

Although only some 20 miles apart (as the crow flies) sagenite agate from Owl Hole Canyon and Wingate Pass are totally different, yet both are formed in rhyolite. That from Sagenite Canyon near Owl Hole is largely in the form of nodules and has much clear agate, with some turtle back, while that from Wingate Wash is all seam agate and the sagenite needles filled the cavity before the agate was formed around them.

Reverend Paul M. Dobberstein, Famous Grotto Builder, Passes

It is with deep regret that we announce the death of the Reverend Paul M. Dobberstein, who for 55 years was pastor at St. Peter's and Paul's Church at West Bend, Iowa, on July 24th, 1954, at the age of 81.

Father Dobberstein, who was born in Germany, was the builder of the world famous "Grotto of the Redemption" at West Bend, a small town in northwestern Iowa which bears the distinction of being the home of the most magnificent work of its kind in the entire Western hemisphere.

As a mineral collector, Father Dobberstein was without doubt the peer of them all. While the grotto has been under constant construction for more than forty years, at the time of his death it was only partially finished, and plans are made for his successors eventually to carry on the work to completion.

Within the lovely Church nearby, one finds the beautiful "Cradle of the Nativity", housed in a niche-like room, constructed wholly of precious and semi-precious gem material valued at more than a quarter of a million dollars. This priceless work of art must be seen to be appreciated.

We know of nothing to equal it anywhere.

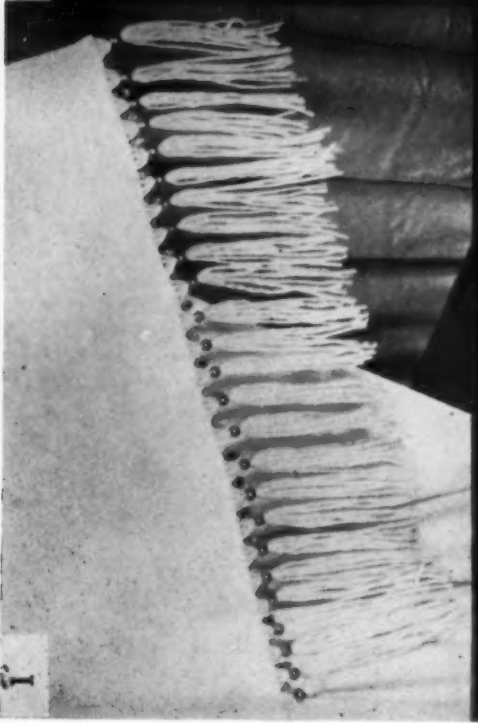
The great Grotto itself, covering more than a quarter of a block, stands in the Church yard outside, being constructed only of the finest of mineral materials, mostly crystals, to withstand the ravages of time for a thousand years. It has been said by those who should know, that it has an art value of far more than a million dollars. It is visited annually by tens of thousands, who come from all over the world to view it, and all are astonished at its beauty and magnitude.

For all this, one man, Father Dobberstein, is responsible. He planned and carried out the entire project. It was his brain child from the beginning, and was built largely by the work of his own hands. Hundreds of thousands of crystals, and other fine materials have gone into its walls and passageways, and yet nowhere can anyone see the slightest trace of cementing material. As an artisan in this work, Father Dobberstein stands alone. He has had no equals or even imitators, either at home or abroad.

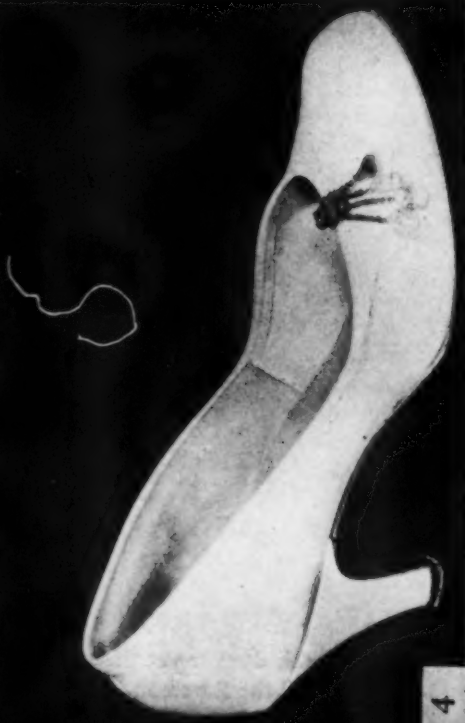
—B.H.W.



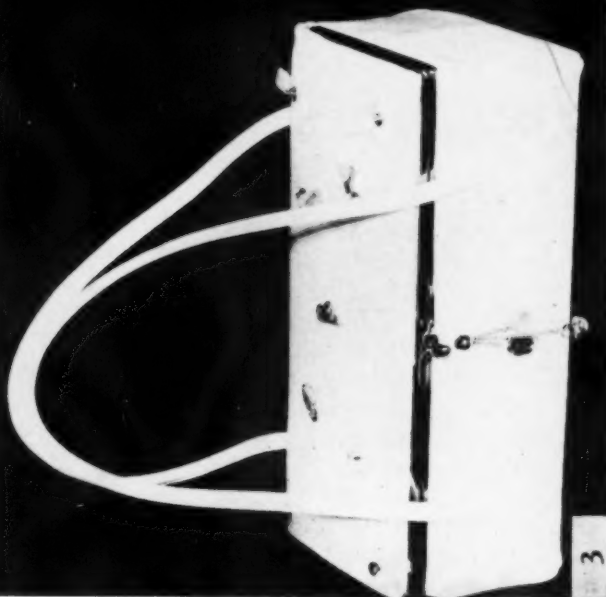
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Gem of an Outfit

by VIOLET ALLEN

NOWADAYS THEY ARE TRIMMING EVERYTHING, the more beads, rhinestones and sequins the better. I got the idea why not trim some clothes with real gem stones. Since baroques are all the rage now and not too expensive why not use them, I told myself. I started out with a dress to trim and wound up with a complete outfit, dress, hat, stole, shoes, purse and gloves. No doubt there are a lot of people who don't know what a baroque is, so I will explain here for those who don't already know. A baroque is a gem stone polished in its irregular shape or form. Most always they are tumble polished. The most commonly used until this past year were baroque pearls. Now they can be purchased in almost all gem materials. The picture (on the cover) is of me, yes, a wee bit overweight for a model, but after making the outfit I sure am going to wear it. So you will just have to put up with me in it.

Dress material is of rayon and wool boucle. I am lucky, my mother made the dress for me, it only took two and one-half yards. If you don't sew or have some one to sew for you it shouldn't be hard to find a ready made dress you can trim. I used topaz (citrine) baroques, about $\frac{1}{2}$ " or $\frac{5}{8}$ " long and approximately $\frac{1}{4}$ " wide. Always grind off the end where you are going to cement the up-eye. If you don't have a grinder don't let that stop you, just get a piece of silicon-carbide cloth about 220 grit and do it by hand, it really isn't hard, just takes a little longer. I used the tiny size up-eye in yellow gold-filled. An up-eye is a little cup with a ring soldered to dome side in an upright position, and can be purchased at most any lapidary supply store. First step after getting the dress made I decided how many baroque dangles to put on it. My dress has eighteen with nine more on the belt. With the baroques ready it is time to cement or solder the up-eye in place. For this I used Allen stone solder.

This stone solder looks like solder, so care should be taken to be as clean as possible and not get it anywhere except where you want the up-eye. Simply put solder on ground spot and with tweezers pick up up-eye and apply, simple as that. Lay them on a piece of cardboard for easy moving and leave set from twenty-four to forty-eight hours. Don't handle till completely dry. Before using these I always check to make sure they are soldered firmly, if not I pull them off and do them over. At this time it is no problem but after you have put them on the dress it is. Around each scallop and for the diamond design on the belt I used citrine colored glass beads, they worked in very nicely with the baroques. At the point of each scallop and in each diamond on the belt I sewed a baroque dangle, topping it with a glass bead.

For the stole (Fig. 1) I used the same material as for the dress. This material is tubular, just right for stoles. Two yards is enough for what I used, and a four ounce skein of wool yarn for the fringe. Oh yes, I almost forgot to tell you that this outfit is all white except for the baroques, beads and up-eyes. I made an eight inch long fringe, cutting the yarn in seventeen inch pieces, picking it up in the center and pulling it through with a crochet hook, then pulling the two ends through the loop; this is a simple way to make a fringe and goes fast too. Now I took fifty $\frac{7}{16}$ " gold-plated metal beads and had Gene, my husband, drill the hole out a little larger. He used a wooden ring clamp to hold the beads, using a $\frac{7}{64}$ " drill; he sharpened it for drilling brass and used a flexible shaft to drill with. With a crochet hook I pulled eight threads through the hole in bead, pulling the bead up to about one inch of the stole itself. Between each of these beads I sewed a baroque dangle, same as used for dress.

For the hat I cut a fourteen inch square

piece of buckram (white). I held it under the water till it was wet, then I pulled it down over the bottom of a gallon bucket till it was smooth with no pleats or gathers around the bottom. Now leave it alone till it is almost dry. If it is allowed to get too dry it will stick to the bucket, so remove while it is still damp. Care should be taken not to stretch out the bottom of form. With form off bucket find the side you think best for front, make a mark where you want the point to be and from that find the center of the back. Start and cut from point in front, up sides and down to a curve in the back. Now gently try on your own head and shape it to fit, this way you will really have a hat that feels good on your head. I cut a circle of the material left from the dress the same size as the top of the hat and a straight piece about six inches wide and long enough to go around the hat. Sew the straight piece to the frame. With needle and thread tack down around the bottom of frame. Cut a bias piece about an inch wide and starting in the back, using sewing machine, sew piece to edge of hat on inside and by hand finish the binding on the outside. I sewed a line of glass citrine beads around the edge of the binding. For the baroque trimming I used seventeen small baroque stones. I fastened an up-eye to each, same as for dress. I then took five pieces of gold-plated chain ranging from one inch to two inches in length; with a small jump ring I connected a dangle to each piece of chain. With another jump ring I connected the five pieces of chain together. Now I sewed the jump ring to the front center of the hat so that the dangles almost touch the glass beads. The other twelve dangles I attached to twelve pieces of chain from $\frac{3}{8}$ " to $\frac{3}{4}$ " in length with a jump ring, then connected the pieces of chain in bunches of three. Sew equally spaced on the front of hat, two on each side of group of five. Take three-fourths yard of veiling, double over lengthwise, find center of veil, tack to center front of crown. Bring veil to center back and tie. Tack in several places to hold veil. Make

this hat and wear it, see how many admire it.

With gloves (Fig. 2), mother again helped; she crocheted them, but if you can't make your own gloves I see no reason why you can't trim a ready-made pair just as well. My gloves have a crocheted ribbon threaded in around the gloves and tied in a bow on the back. On the two ends I put a gold-filled baroque cap and formed it down over the ends and sewed them on with needle and thread. To each of these I attached a baroque dangle made as before with a jump ring. This really does put the finishing touches to your gloves.

For purse (Fig. 3), as you can see I used a plain box type. I used twelve baroques in all on the purse. I marked nine spots with pencil on top of purse; with drill using flexible shaft, we drilled the nine holes from the inside and one more under the catch in front. Don't do as we did and try to drill from outside, for there is always a padding under the leather which will only wrap around the drill. It is not hard from inside; just drill through hard part and use a large needle to make hole through padding and leather. I used nylon thread for all my sewing. I put a glass bead on end of thread, started through from inside; on top I used a gold sequin, then another glass bead, then through up-eye on dangle and back through sequin and hole, now tie thread around the bead on the inside. I put nine dangles in all on top this same way, the other three I attached to three pieces of gold-filled chain, one one-half inch, one three-quarter inch and one one and one-half inch long, with jump rings; with one more I connected the three pieces together; as before, I put a glass bead on thread, inserting needle through hole under catch, now a sequin through the jump ring, another sequin, now a bead and back through the sequin, jump ring and hole, and tied on inside around bead. This really makes a clever purse. Try it.

Last but not least the shoes (Fig. 4). I purchased a pair of plain white leather pumps. First I made two shoe clips, using

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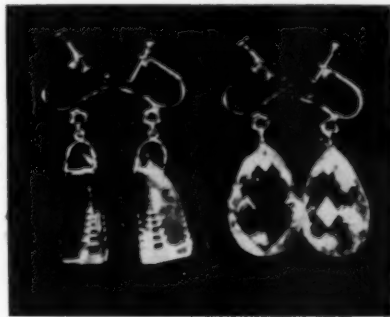
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The United States Geological Survey Will Aid In Planning A Successful Field Trip

by ROBERT E. RIECKER

A FRIEND OF MINE returned recently from an extensive field trip to the West with only very modest returns of gem materials and mineral specimens along with substantial quantities of disappointment and frustration. He charged, "I'll never go on one of those wild goose chases for rocks again. Why, I paid more for lodging and gas on this trip than I would have if I had tried to buy the Chicago Natural History Museum."

This man, whom I will not embarrass by naming, prepared himself for a four-week trip through Colorado, Wyoming, Idaho, and Washington. He returned, as many collectors do, with little more than he might have found in his own back yard. He claimed he was so busy hunting for rocks that he had no time to even enjoy the scenery. His prospective locations were quoted, he said, from old geology books and commercial gem finders. He had many spots relayed to him by friends, some of whom perhaps, had not been near those locations for a decade or more. Other locations which were supposed to be good turned out to be only dry runs, over-collected by dozens of rockhounds who "got there first."

Again, some spots which had great promise he never reached for the terrain was "impassably impossible." If I thought that he was frustrated then, I was only receiving the preview of things to follow when he found out that he was paying for a service today which would have guaranteed him a prosperous and an enriching field trip had he consulted it for help before he left. His government taxes were supporting the United States Geological Survey, a fact which he had completely overlooked.

He explained that he had never heard of

the Survey and if he had, it sounded much too high-brow to be of much help to him. He calmed down, however, after he discovered that the Survey was established to help all our citizens with the same problems he had. The Geological Survey has mapped geologically and topographically a large portion of the United States. These maps are easy to read and to understand. The Survey spends almost its entire budget of 50 million dollars annually seeking treasures above and below the earth, or describing some formation for pure science. After making these expensive investigations, the Survey publishes reports of all the important information collected in the field. These reports are then made available to the public. The Survey does no mining and makes no claims to their finds. The exploitation is entirely up to private enterprise, even to you and to me.

There are geologic maps made in every state of the union, and larger maps covering much smaller areas. A huge 51 by 90 inch geologic map of the whole United States printed in 23 colors, showing 160 rock units is very efficient for detailed study. Contour maps also printed by the Survey cover much of the country. In fact the Survey has available thousands of maps, bulletins, reports, water-supply papers, circulars, monographs, mineral resources reports, charts and surveys on just about every phase of geology, mineralogy, and paleontology known to man.

This service of our government will send maps and charts to a hobbyist or professional geologist on the same terms, showing exactly where to find minerals, gems and other deposits. Using road maps and other helps, the terrain may be actually explored successfully, and really "seen."

The chances are that of the very place where you now sit, reading this article, the Geological Survey has printed a map showing the strata below you to base rock, and has fully described that region for mineral, gem, and other rock wealth, besides printing topographic maps showing the elevation or lay of the land by contours lines and other effective means. Most states also have a state survey or department working closely with the National Survey, also publishing special geological maps and information on the state.

By writing to the Director, Geological Survey, Washington 25, D. C., you may receive a catalogue of the publications of the National Survey. This publications catalogue is to be revised every five years from 1948. In the intervening period yearly supplements are printed. If you like, you may also ask for the monthly supplements of new publications. All are free. There are a few charges made for maps or reports, but they are all modest, being handled on

a non-profit basis. There is no charge for postage in the U. S. or possessions.

Already our friend has taken another trip to the West. This time he was fully equipped with maps, charts and reports of the Survey. He went to the mines or locations chosen in advance from these publications and found exactly what was listed for those regions. Now I will let you in on a secret. When I returned from this second trip I was fully satisfied, and hope to go again soon, for you see the man I was originally protecting from embarrassment is actually myself.

I am convinced that no service at any cost can insure as fine a field trip as the United States Geological Survey. Take advantage of their records, for after all your taxes keep them in business, and believe me their reports will put you in business on your next trip. You are invited to use their facilities if you are genuinely interested, but not to waste them solely out of curiosity.



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GEM MATERIALS FOR THE AMATEUR

Any of us gets into a rut—in amusements, at work, and even in our lapidary hobby. We cut too many agates or we make too many cabochons, when the world and the dealer's show cases are filled with a great variety of challenging materials we have never tried, and the opportunities to make buttons and beads and purse zipper pulls is unlimited.

With this in mind, it seems desirable to recall that all these materials exist. Few of the ones listed below are expensive, although it is easy to spend a week's wages on a fine opal, and chrysocolla and jade have become luxuries, unless you know a man who knows a man who will let you in on his pre-war hoard. Otherwise, the following gem materials should be in the collection of the amateur lapidary who enjoys the opportunities that his hobby allows him of working with some of the loveliest products of the mineral kingdom:

AMBER—Easy to work, suitable for brooch, carving or beads. Polishes readily by rubbing with a soft cloth.

CORAL—Red coral from the Mediterranean has not been as popular with the amateur as it should be. Stones will be small but of a color unique to this material.

CHRYSOCOLLA—Good material scarce, but even a small cabochon of this lovely blue, translucent material is a treasure. Don't buy the opaque earthy material often sold as chrysocolla.

FELDSPAR—Includes some of the finest amateur materials: *Amazonite*, a vivid green of which the best is from Brazil, Colorado, or Virginia; *Aventurine*, green spangled; *Labradorite*, tricky to orient but unsurpassed for its play of colors; *Moonstone*, one of the choicest semiprecious gems; and *Sunstone*, a fiery, reddish spangled material. All feldspars have a pronounced cleavage, which makes them a little difficult to work. Be sure the material, especially labradorite, is not shattered.

GARNET—*Pyrope* (blood red) and *Almandine* (violet red) are the best available. All garnets are sensitive to heat and shocks in cutting but make highly desirable gems. Some experts shape them on a whetstone and polish them by hand on a piece of leather with tin oxide.

GYPSUM—Satin spar is soft but easily worked and deserves more attention from the amateur.

HEMATITE—Messy to work but effective in buttons and carvings. So is a stratified mixture of hematite and jasper from the Minnesota mines and from Egypt.

IDOCRASE—The Californite variety is a beautiful limpid green, very easy to polish and hard enough for rings. This material, often known as California jade, has not been offered recently by dealers. It deserves more attention.

JADE—Good light green is hard to get now, and usually overpriced, but the black and gray from Wyoming are attractive. California has a fine bluish variety that has never been offered to the amateur gem cutter.

MALACHITE—Be sure to get solid, well marked material that will not crumble. Both lined and bullseye varieties are good.

OBSIDIAN—There is a great variety of this volcanic glass: black, snowflake, double flow (black and red), silver and gold sheen, and even red. Brittle, but easy to work. The sheen varieties must be cut properly to bring out their beauty.

OPAL—Finest of all gem materials for the amateur, but not cheap or abundant in better grades. Australian supplies are more plentiful. Opal is not difficult to work if kept cool. By making doublets, thin material can be turned into fine gems.

QUARTZ—The amateur's happy hunting ground. The quartz minerals exist in great variety, are cheap, abundant and attractive. Among them are: *Agate*, Brazilian, both in natural and heat-treated carnelian, and dyed agate; Mexican and Texas, which are relatively coarse but well patterned; Oregon, the fine plume and tube agate from thundereggs; Lake Superior and Keweenaw, small and often fractured but unequalled for pattern when sound; Deming, N. M., and California nodule agates, which have attractive patterns and color; and the standby, Montana moss agate, most popular of all. *Ametyst*, Good for cabochons when not of faceting grade. *Bloodstones*, very popular for men's rings, especially when red spots are small and evenly distributed. Green background should not be dull in color. Best quality from India. California variety often

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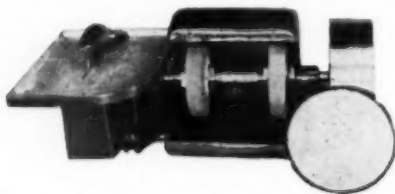
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inferior. *Carnelian and Sard*, Good for hearts, etc. *Rose Quartz*, rare in good color and fairly free of flaws, but lovely when good. *Tiger's Eye*, (yellow or red); *Hawk's Eye* (Blue), the chatoyant material that is so well liked. New colors and mixtures of colors have become available. They make this even more attractive to the amateur. *Smoky Quartz*, deserving of more popularity for cabochons. Also called Cairngorm (in Scotland). *Jasper*, Arizona or California poppy jasper and the many other brown, green, yellow jaspers and even black. Found in good quality, widespread. *Gem Flint*, from Ohio, worthy of more attention. *Petrified wood and bone*—not common in grades with color and pattern, but striking when good. *Chert*, sometimes attractively banded. Often brittle and must be worked with considerable care.

RHODONITE—Unmatched for pinks and reds and contrast effects with black, but soft and difficult to polish. *Rhodochrosite*, a related mineral, is perhaps even more beautiful with its striped and Inca rose effects.

SERPENTINE—A much unappreciated gem material in most of the United States. Both williamsite and bowenite, the gem serpentines, are excellent although not very hard. Neither is plentiful. They equal or excel domestic jade in color when of top quality.

SODALITE—Perhaps the finest of all blue gem materials. Abundant, cheap and hard, and can take the place of the almost priceless lapis lazuli.

THOMSONITE—A splendid midwestern material, not too plentiful but attractive, with eyes of red and green. It takes a high polish. *Chlorastrolite*, a related mineral principally from Isle Royale, is smaller and scarcer but unique for its chatoyant patterns.

TURQUOISE—Good material is not as scarce as commonly believed. It is easy to work and very attractive in silver mountings.

VARISCITE—Best quality is a rich green, but the paler with mottlings of yellow is well worth cuttings. It is easy to work.

Some of the softer materials, such as gypsum, malachite, rhodonite and serpentine, will be found to polish better on a muslin buff than with the usual felt buff. Oxalic acid is sometimes used to heighten the luster. Ricolite, the New Mexican striped serpentine, will not polish well in any other way. Materials such as petrified wood and bone, too, frequently will "pit" badly on the felt, but will keep an even surface on the muslin.

Such a stone as tiger's eye should be polished as rapidly and gently as possible, as the fibers may pull out, leaving a roughened surface. Much nonsense has been written about the difficulty of polishing jade, and perhaps the greatest

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heresy is the belief that jade must be worked very hot on the polishing buff. Jade will polish well on felt, leather or wood, with tin, cerium or chrome oxide, or Linde A powder. Leather and Linde A are a good combination, but keep the stone cool.

The lapidary also would do well to vary the wearisome routine of piling cabochon on cabochon by making some free forms in which the stone is shaped irregularly to follow out its native pattern, and by making buttons, beads, carvings, and the like.

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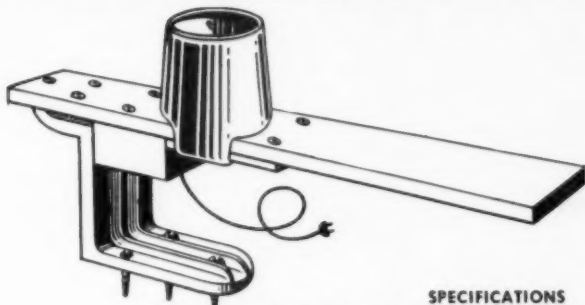
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OFFICIAL ORGAN OF MIDWEST FEDERATION

MIDWEST CLUB NEWS

BERNICE WIENRANK, *Club Editor*
4717 North Winthrop Avenue
Chicago, Illinois

INDIANA GEOLOGY AND GEM SOCIETY was scheduled to pan for gold on August 8 in Gold Creek, located in Morgan County, Indiana. Diamonds, sapphires and garnets have also been found in the glacial debris deposited in Gold Creek. Recorded finds of Indiana diamonds number more than 20.

MICHIGAN MINERALOGICAL SOCIETY will be host to the Midwest Federation Convention in 1955. Plans are being made to make this a field trip convention. Michigan is rich in minerals and has an abundance of fossils. (See "Collecting Michigan Minerals," by John Mihelcic, July-August, 1954 issue of *EARTH SCIENCE DIGEST*). ISHPEMING ROCK AND MINERAL CLUB has placed in Ishpeming's new National Ski Hall of Fame a display featuring minerals from all parts of the United States. This step is part of the plan to make the museum a "living" place by exhibiting items of area interest. All show cases used by the museum to exhibit its mementos of the ski sport have also been donated by IR&MC.

EARTH SCIENCE CLUB OF NORTHERN ILLINOIS will sponsor a series of lectures in paleontology this fall. Previous courses presented by the society include determinative mineralogy, archaeology and the lapidary arts.

AKRON MINERAL SOCIETY recently collected excellent flint for polishing at Flint Ridge, Ohio. It was here that the Indians from all over the eastern half of the United States came to obtain fine flint for arrow points.

MINNESOTA MINERAL CLUB on July 2 chartered a bus for a collecting trip in the Michigan Copper Country. There the group collected chlorastrolite, laumontite, chrysocolla and copper. The finest specimen of native copper was picked up by Don Hughes. It was in a fern like spray about 8 inches long.

GEOLOGICAL SOCIETY OF MINNESOTA has installed bronze plaques inscribed with geological

data, at points of particular interest throughout the state of Minnesota. This project is the first of its kind ever undertaken by an amateur geologic society.

EVANSVILLE LAPIDARY SOCIETY on July 31 enjoyed a combination picnic and archaeological excursion at Angel Mounds in southern Indiana. These mounds were built by prehistoric Indians and excavations have revealed much about the culture of the early Americans who made them.

NEWS OF OTHER SOCIETIES

MINERALOGICAL SOCIETY OF PENNSYLVANIA on July 11 visited the Eureka Stone quarry at Eureka, Pennsylvania. The rock quarried there was formed during the Triassic age and contains many rare fossils from that period. Minerals such as pyrites, smokey quartz crystals, and butterfly and other forms of calcite are also found in the quarry. New sections of rock are always being exposed by the many blasts set off in the quarrying operations.

MSOP conducts a Sunday school class for children who accompany their parents on the society's field trips. The child's church marks him present when notified that he has attended an MSOP class and thus his Sunday school attendance record is not spoiled.

EL PASO MINERAL AND GEM SOCIETY recently made a two-day trip to Kingston, New Mexico, to collect chalcedony roses. Many specimens of lovely and odd shapes were obtained.

OKLAHOMA MINERAL AND GEM SOCIETY on August 5 viewed "A Diamond is Forever." This is a color film dealing with African diamond mines, the cutting of diamonds and famous historical diamonds.

COLORADO MINERAL SOCIETY recently visited Floy, Utah, where the group collected an abundance of agates and gastroliths. CMS reports that uranium hunters are very active in this locality, which is largely desert terrain.

ROCKY MOUNTAIN FEDERATION's officers for 1954-55 are as follows: President, Mr. Ralph

Platt; vice president, Mr. G. A. Willis; secretary-treasurer, Mrs. M. A. Lynch.

SAN DIEGO LAPIDARY SOCIETY has discontinued desert field trips for the summer. It warns: Do not go rock hunting in the desert during the summer; during this time the desert's heat can kill.

DELVERS GEM AND MINERAL SOCIETY at its July meeting viewed an exhibit of petrified wood slides prepared by Thomas and Murdell Holbert. Growth rings and knurls were easily seen in the very thin slices of wood. Specimens shown were all from the Boron, California, area.

HUMBOLDT GEM AND MINERAL SOCIETY at a recent meeting held a "Brag Nite." Members brought their favorite rocks or gems and gave brief histories and descriptions of them. A few brought rocks for the membership to identify.

WICHITA GEM AND MINERAL SOCIETY members made two field trips during August. A trip was made to Great Salt Plains area in Oklahoma for selenite of a type not found in Kansas. A second field trip was to the salt mines in Hutchinson, Kansas, for specimens. Parties are taken underground in the Carey mine and walk or ride on a train through the rooms of salt. A panel answered questions on fossils, minerals, lapidary and Indian relics during the regular

August meeting with Mrs. Walter Broderson, president, presiding.

RECOMMENDED READINGS FROM THE SOCIETY BULLETINS

"The Kohinoor," by Ed Soukup, July issue of *Shop Notes and News*. This diamond had a long tragic history filled with murders and wars before it finally came to rest in the crown of the Queen of England.

"Cave Rope: General Handling," by Jerry Bloch, June issue of *Speleological News*. A caveman's life often depends on his rope. This article tells how to keep it from becoming a safety hazard.

"Is It Pure?" by George Smith, August issue of *Sooner Rockologist*. An interesting resume of the amazing changes that impurities cause in the properties of metals.

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